

REMARKS

Upon entry of the instant amendment, claims 1-28 will remain pending in the present application. In the instant amendment, claims 16 and 20 have been amended and new claims 27 and 28 have been added.

The instant amendments made herein to the claims do not incorporate new matter into the application as originally filed. For example, the amendments to claim 16 is simply made to help clarify that a precipitation step occurs in the claimed method, while the amendment to claim 20 simply revises punctuation for purposes of clarity. New product-by-process claim 27 is based on a combination of original claims 1 and 16, and new product-by-process claim 28 is based on a combination of original claims 1 and 20.

Proper consideration of each of the pending claims (i.e., claims 1-28) is respectfully requested at present, as is entry of the present amendment.

The instant amendment does not raise any substantial new issues for the Examiner's consideration, or require any further search or consideration on the Examiner's part, and at the same time serve to remove and/or simplify outstanding issues for purposes of appeal, so that entry of the instant amendment after final rejection is entirely appropriate under 37 CFR § 1.116.

Exhibit Figures Enclosed

Enclosed with this Reply are three (3) separate "**Exhibit Figures**", which are labeled "Exhibit Figure 1", "Exhibit Figure 2" and "Exhibit Figure 3". These Figures are enclosed to help show and explain distinctions over the cited art of record; the Exhibit Figures are not Figures that were part of the originally filed application and they should not be so treated.

Claim Rejections - 35 USC § 102(b) and 35 USC § 103(a)

Claims 1-11 and 14-26 have been rejected under 35 USC § 102(b) as being anticipated by or under 35 USC § 103(a) as obvious over Braat et al. (US 6,211,327). Claims 16-26 have been rejected under 35 USC § 102(b) as being anticipated by Dalton et al. (US 4,463,164). Further, claims 1-15 have been rejected under 35 USC § 102(b) as being anticipated by or under 35 USC § 103(a) as obvious over Dalton US'164. Still further, claims 1-11 and 14-15 have been rejected under 35 USC § 102(b) as being anticipated by or under 35 USC § 103(a) as obvious over WO '273 (WO 00/46273).

Reconsideration and withdraw of each of these rejections is respectfully requested based upon the following considerations.

Legal Standard for Determining Anticipation

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art.” *Brown v. 3M*, 265 F.3d 1349, 1351, 60 USPQ2d 1375, 1376 (Fed. Cir. 2001) “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis*

verbis test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Legal Standard for Determining Prima Facie Obviousness

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999).

“In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification.” *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. “The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art.” *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The Present Invention and Its Advantages

The present invention (*see claim 1*) is directed to polyphenylene ether (PPE) having a relatively low molecular weight and a narrow (sharp) molecular weight distribution. More specifically, the polyphenylene ether has a specific reduced viscosity (a reduced viscosity (η_{sp}/c),

as measured at 30°C in a 0.5g/dl chloroform solution, of 0.04-0.18 dl/g) and a specific molecular weight distribution (a molecular weight distribution of 1.5-2.5).

The low molecular weight PPE of the present invention has high thermal resistance, excellent electric properties and solubility to various solvents or reagents, and has a good ability for mixing or reacting with other components.

Further, the present invention (*see claims 16 and 20*) is also directed to a process for producing the low molecular weight PPE efficiently by selectively precipitating the low molecular weight PPE.

In general, a process to produce PPE comprises following four steps:

Step 1: polymerization of a monomer

Step 2: deactivation of a catalyst

Step 3: removal of a deactivated catalyst

Step 4: drawing of an obtained PPE.

In such a polymerization, a solvent is needed. In the present invention and the cited references, three types of solvent appear, as is summarized in Table 1 immediately below.

Table 1

Solvent Type	Example of Solvent	Catalyst/ Monomer	Low molecular weight PPE		High molecular weight PPE
			$\eta_{sp}/c:$	<0.3	0.3<
			Mw	<25,000	25,000<
A	Aromatic hydrocarbon (toluene, etc.)	Soluble		Soluble	Soluble
B	Aliphatic hydrocarbon (octane, etc.)	Soluble		Soluble	Insoluble
C	Alcohol (methanol, etc.)	Soluble		Insoluble	Insoluble

In the case where a Type A solvent is used alone as a polymerization solvent, the obtained PPE has still been solved in the solvent at the end of above-mentioned step 1. This method is called “solution method”.

On the other hand, in case of using a Type B solvent, it depends on the desired molecular weight of PPE whether the obtained PPE is solved or not solved (i.e., precipitated). When the desired molecular weight of PPE is lower than 25,000, the obtained PPE is still solved in the solvent (solution method), and when the desired molecular weight of PPE is higher than 25,000, the obtained PPE cannot be solved, and thus is precipitated. This latter method is called a “precipitation method”.

Finally, in case of using a Type C solvent, the obtained PPE is precipitated, which is again called a “precipitation method”.

The low MW PPE of the present invention has a reduced viscosity of 0.04-0.18 dl/g, therefore, solvents of Type A and Type B are (good) solvents for the low MW PPE of the present invention, and a Type C solvent is a poor (*or “anti”*) solvent for the low MW PPE of the present invention.

Further, the present invention (*see claims 27 and 28*) is also directed to a low molecular weight PPE obtained by a recited process, which are therefore defined as product-by-process claims.

Distinctions of Product Claims (claims 1-11 and 14-15) over Braat US ‘327

Braat US ‘327 fails to teach or disclose “a molecular weight distribution of 1.5-2.5”.

The low molecular weight PPE of the present invention is distinguished from PPE obtained in the cited reference. For example, in Comparative Example 5 as described at page 27 of the instant specification, PPE was obtained according to the method of Braat US‘327 (*see page 27, lines 9-10 of the instant specification*). PPE obtained according to Braat US‘327 has a molecular weight distribution of 2.68 (*see Table 1 at page 30 of the instant specification*), while the molecular weight distribution of the present invention is 1.5-2.5. That is, the molecular weight distribution of the present invention is narrower (i.e., *sharper*) than that of Braat US‘327.

At page 2, lines 6-12 of the outstanding Office Action, the Examiner states as follows:

“Applicant argues that the PPE obtained according to the method of Braat has a MW distribution of 2.68 while the MW distribution of the present invention is 1.5-2.5. Note that Braat reference has been carefully reviewed but the reactants and the cited conditions in Comparative example 5, lines 9- 25 in the specification of the present invention, could be not located anywhere in the specification of the Braat reference. Applicant’s arguments are also based on the requirement of claims 16: “adding the poor solvent to precipitate the low MW PPE”. (Emphasis added.)

However, Applicants submit that Comparative Example 5 of the present application properly represent the PPE of Braat US‘327.

Each of the reaction conditions of Comparative Example 5 in the present application and in the Braat US ‘327 reference are shown in Table 2 immediately below.

Table 2

		Comparative Example 5 of Present Application	Braat reference example
Step 1	Monomer	2,6-dimethylphenol	2,6-xylenol
	Solvent	Toluene	Toluene
	Catalyst	Cuprous bromide/ di-n-butyl amine (This has been missing at the translation. It can be seen in the priority document: incorporated by reference)	Cuprous bromide/ di-n-butyl amine
	Temperature	40-45°C	40-45(48)°C
Step 2	Deactivator	Aqueous solution of nitrilotriacetic acid	Aqueous solution of nitrilotriacetic acid
	Heating	55°C, 70minutes	55°C, 70minutes
Step 3	separator	Liquid-liquid centrifuge	Liquid-liquid centrifuge
Step 4	Pre-condensation	Until the solid portion became 65%	Until the solid portion became 65%
	Condensation	using a devolatilization	using a devolatilization
		Solution was devolatilized	
PPE	η_{sp}/c	0.112	0.113
	Mw/Mn	2.68	(Not Explicitly Disclosed)
	Tg	162°C	(Not Explicitly Disclosed)
	Dielectric const.	2.59	(Not Explicitly Disclosed)

As shown in Table 2, the conditions of Comparative Example 5 of present application are identical to those of Braat US‘327 in their important points.

Important points of Comparative Example are as follows:

- The polymerization method is a solution method, that is, the PPE at the end of Step 1 has still be solved, and
- The obtained PPE is drawn by devolatilization, that is, since the solvent was removed, the molecular weight distribution of the PPE at the end of Step 1 still remains.

Thus, the PPE was obtained by using the same monomer, solvent and catalyst under the same conditions; furthermore, treatment after polymerization was also carried out under same condition. Therefore, it is submitted that the obtained PPE is also substantially identical to PPE obtained by the manner of Braat US'327.

Accordingly, Applicants' argument that PPE of Braat US'327 has a molecular weight distribution of 2.68 is well supported by Comparative Example 5 of the instant specification.

Further, the Examiner states in the office action, that the molecular weight distribution of the present invention is inherent in Braat US '327, since the reference disclose the reactants and the steps of the claimed process (*see page 2, line 8 from the bottom to page 3, line 3 of the office action*).

However, it is also noted that methods disclosed in the present application that can be used to obtain the product of the present invention are also distinguishable from Braat US'327.

The low molecular polyphenylene ether of the present invention can be obtained by, for example, the method of claims 16-26 (*the method of the present invention*). In the method of the present invention, recited features include the following (*see claim 16*):

"adding a poor solvent of said low molecular weight polyphenylene ether to the polyphenylene ether solution obtained by said polymerization", and

"precipitating a low molecular weight polyphenylene ether having a reduced viscosity (η_{sp}/c), as measured at 30°C in a 0.5g/dl chloroform solution, of 0.04-0.18 dl/g".

Namely, adding the poor solvent so as to precipitate the low molecular weight PPE is one of the features of the method of the present invention used to prepare low molecular weight PPE of the invention.

In contrast, Braat US ‘327 fails to teach or disclose such a method. For example, in the cited reference (*see column 2, lines 20-35*), PPE is isolated thought devolatilization of the reaction solvent (which is not a precipitation). Thus, this description in Braat US ‘327 means that the method of the cited Braat US ‘327 reference is a solution method, in which usually a precipitation of PPE never substantially takes place. Further, it is known that PPE obtained by a solution method has a broader molecular weight distribution, since the polymerization of PPE take place continuously in a good solvent for PPE (*see Comparative Example 5 at page 27 of the instant application, which is substantially identical to Braat US‘327 as explained above*).

Further, at page 2, lines 13-16 of the outstanding Office Action, the Examiner states “*the reference disclose the use of a good solvent such as benzene, toluene, xylene (see col. 5, lines 30-40) in the polymerization, and the use of anti-solvent such as alcohol (see col. 6, line 48) in combination with aqueous solution containing water (see col. 6, lin37-38)*”.

However, this is quite different from the instant methods of the present invention where a poor solvent is used to precipitate the low molecular weight PPE. More particularly, the disclosure at column 6, lines 48 and 37-38 of Braat US ‘327 corresponds to Steps 2 and 3 of a typical process to produce PPE (i.e. **Step 2: deactivation of a catalyst, and Step 3: removal of a deactivated catalyst**) as explained above. That is, the purpose of adding an anti-solvent in combination with water is not to precipitate PPE, but is instead used to make the catalyst easily removable. In other words, a water phase including catalyst and an oil phase including PPE can be separated easily by adding an anti-solvent. This is a typical approach employed in a solution method. Thus, in Braat US ‘327, precipitation does not take place even if an anti-solvent in combination with water is added in its process.

Further, Braat US ‘327 fails to teach and/or specifically suggest any manner to control, the molecular weight distribution of the low molecular weight PPE, this is especially true with regard to obtaining an especially narrow (sharpened) molecular weight distribution.

Further, at page 3, lines 1-3 of the Office Action, the Examiner states “*the reference does disclose the used of the precipitation process (see cited col. 7, line 63)*”.

However, the Braat US ‘327 reference is not directed to a precipitation method. The cited portion of Braat US ‘327 (*column 7, line 63*) merely states that the method of Braat ‘327 is superior to a precipitation method. Furthermore, Braat US ‘327 discloses that a precipitation method is not generally useful for isolation of low MW PPE (*see col. 7, lines 10-16 of Braat US‘327*). Thus, it is submitted that Braat US ‘327 actually teaches away from the method of the present invention.

The relationship between the present invention, Braat US‘327 and Dalton US ‘164 (*which is discussed in detail below*) is shown in ***Exhibit Figure 1*** enclosed herewith. From Exhibit Figure 1, it is clearly realized that the present invention is distinguished from the cited references.

Further, at page 3, lines 4-9 of the Office Action, the examiner states that modification of temperature is the level of ordinary skilled in the art.

However, to reach a proper determination under 35 U.S.C. 103(a), the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure

must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. (*See MPEP § 2142.*)

The temperature at the time of precipitating PPE affects the polymerization, as is shown in the Examples in the instant specification (i.e., *see Examples 9 and 10, and Comparative example 6*). In order to obtain the low MW PPE in a high yield through a solution method, the temperature at the time of precipitating PPE is significant.

There is no disclosure in the cited art of record, which concerns and/or is related to the temperature at the time of precipitating PPE. It should be noted that the cited Braat US '327 reference only discloses the temperature at the polymerization and not at the time of precipitation. In the polymerization progress of PPE, polymerization usually is carried out at the temperature of around 40°C, and the process after polymerization, that is Steps 2, 3 and 4, is also carried out under a temperature that is the same as with polymerization. Thus, Braat US '327 fails to give any consideration to the temperature at the precipitation.

Thus, as explained above, Braat US '327 not only fails to teach or describe the method of the instant invention, but also actually teaches away from the method of the present invention.

Therefore, any assertion that the present invention is obvious from Braat US '327 is clearly based upon hindsight supported by Applicants' teachings (*rather than by what the reference taken as a whole actually discloses and teaches*).

Accordingly, claims 1-11 and 14-15, which ultimately depend from claim 1, are never anticipated by or rendered obvious by the cited Braat US ‘327 reference of record.

Distinctions of Process Claims 16-26 over Braat US ‘327

The process of the present invention includes features such as “adding a poor solvent of said low molecular weight polyphenylene ether to the polyphenylene ether solution obtained by said polymerization” and “precipitating a low molecular weight polyphenylene ether having a reduced viscosity (η_{sp}/c), as measured at 30°C in a 0.5g/dl chloroform solution, of 0.04-0.18 dl/g” (claim 16), and “precipitating said low molecular weight polyphenylene ether in the course of the polymerization; wherein the polymerization solvent is a mixture of at least two alcohols” (claim 20).

However, as described above, Braat US ‘327 fails to disclose and suggest such features.

Accordingly, claims 16 and 17-19 (which depend from claim 16) and claims 20 and 21-26 (which depend from claim 20) are submitted to be neither anticipated by nor rendered obvious over the disclosure and teachings of the cited Braat US ‘327 reference of record.

Distinctions of Process Claims 16-26 over Dalton US‘164

The present invention is directed at a process for producing low molecular weight PPE having a reduced viscosity (η_{sp}/c), as measured at 30°C in a 0.5g/dl chloroform solution, of 0.04-0.18 dl/g, and a molecular weight distribution of 1.5-2.5. Further, as described above, the process of the present invention has features such as “adding a poor solvent of said low molecular weight polyphenylene ether to the polyphenylene ether solution obtained by said

polymerization” and “precipitating a low molecular weight polyphenylene ether having a reduced viscosity (η_{sp}/c), as measured at 30°C in a 0.5g/dl chloroform solution, of 0.04-0.18 dl/g” (claim 16) or “precipitating said low molecular weight polyphenylene ether in the course of the polymerization; wherein the polymerization solvent is a mixture of at least two alcohols” (claim 20). However, PPE having such properties cannot be obtained by the method disclosed in the cited Dalton US ‘164 reference.

Dalton US ‘164 discloses, as a polymerization solvent, a mixture of a solvent for the PPE and a non-solvent for the PPE.

However, Dalton US ‘164 fails to disclose or suggest obtaining the PPE having low MW defined by the present invention. For example, discloses, when defining solvent, “while at a ratio of 1:10 the molecular weight may be undesirably low and unsuited for most inventions” (*see col. 3, lines 50-52*). Furthermore, in Table I Dalton US ‘164 (*see column 6*), the PPE obtained using only n-Octane as a polymerization solvent, has a MW of 24,500 (*see column 6, Table 1, Example 8 of Dalton US ‘164*). Therefore, Dalton US ‘164 fails to give any consideration about the low MW PPE having a MW lower than 24,500, which is converted to η_{sp}/c of 0.3dl/g.

Further, Dalton US ‘164 discloses using n-octane as a non-solvent in an Example. However, as mentioned hereinabove in the “*Present Invention and Its Advantages*”, n-octane is a non-solvent for the PPE having a η_{sp}/c higher than 0.3dl/g, and is a solvent for PPE having a η_{sp}/c lower than 0.3dl/g. Therefore, the PPE having a η_{sp}/c of 0.04-0.18dl/g of the present invention cannot be precipitated according to the process of Dalton US ‘164. Still further, as mentioned above, drawing low MW PPE of the present invention from a solution where the PPE

is solved in the solution, should be carried out at the low temperature, and this is neither disclosed nor taught in Dalton US ‘164.

Furthermore, Dalton US ‘164 also fails to disclose or suggest the use of alcohols, which cause the precipitation of a specific low MW PPE having “undesirably low” molecular weight or the mixture of such an alcohol.

Accordingly, it is submitted that none of instantly pending claims 16-26 are in any way anticipated by or rendered obvious by the cited Dalton US ‘164 reference of record.

Distinctions of Product Claims 1-15 over Dalton US‘164

Dalton US ‘164 fails to disclose and suggest “a reduced viscosity (η_{sp}/c), as measured at 30°C in a 0.5g/dl chloroform solution, of 0.04-0.18 dl/g, and a molecular weight distribution of 1.5-2.5.”

The Examiner states that the present invention is inherent in the cited references, referring the previous Office Action.

However, as described above, PPE disclosed in the cited reference does not have the specific characteristics of the instant invention.

Further, as mentioned above, the method to produce the specific low molecular weight PPE is also distinguished from a method disclosed in Dalton US ‘164. Further, Dalton US ‘164 fails to disclose or suggest the process for obtaining a PPE having η_{sp}/c of 0.04-0.18dl/g of the present invention.

Accordingly, claims 1-15 are not anticipated by or rendered obvious by the Dalton US‘164 reference.

Distinctions of Product Claims 1-15 over WO '273

WO '273 also fails to disclose and suggest “a reduced viscosity (η_{sp}/c), as measured at 30°C in a 0.5g/dl chloroform solution, of 0.04-0.18 dl/g, and a molecular weight distribution of 1.5-2.5.”

The Examiner states that the present invention is inherent in the cited references, referring to the previous Office Action.

However, similar to Braat US '327, WO '273 relates to solution process. Thus, as explained above, both the product and the process of the present invention are distinguished from the cited WO '273 reference.

In WO '273, PPE is isolated by a devolatilization (*see page 12 line 3 from the bottom and page 17, line 4 from the bottom of the reference*). Namely, the method for producing PPE disclosed in WO'273 is also the solution process, wherein after polymerization, solvent is devolatilized from the polymer solution. As such, PPE described in the cited references has a broader molecular weight distribution than that of the present invention.

Therefore, as explained above regarding Braat US'327, the process of WO'273 is different from the method of the present invention and the PPE of the present invention is also distinguished from the cited reference.

Further, WO '273 fails to teach and suggest specifically any manner to control, especially narrow (sharpen) the molecular weight distribution.

Accordingly, claims 1-15 are not anticipated by or obvious over WO '273.

Unexpected Results of the Present Invention

As shown in the **Exhibit Figures** attached herewith, the low molecular weight PPE of the present invention has a higher Tg and a more suitable dielectric constant, furthermore, solubility to various solvents or reagents, and good ability of mixing or reacting with other components, which are not suggested in the cited references. Further, according to the process of the present invention, such an excellent PPE can be produced productively.

For example, in **Exhibit Figure 2**, Tg (°C), which represents the thermal resistance, at change of viscosity was shown. For example, Exhibit Figure 2 shows the present invention (▲ and ■) has a higher thermal resistance (Tg) than Braat US'327 (□), at the same viscosity.

Exhibit Figure 3 shows the dielectric constants. In Exhibit Figure 3, it is shown that the present invention (▲ and ■) has results better than the cited Braat reference (i.e., Braat US'327 (□)) at the same viscosity.

Accordingly, the present invention also has unexpected results.

New Claims 27 and 28 (Product-by-Process)

Each of claims 27 and 28 is product-by-process claim reciting both features of the products and the process of the present invention.

Thus, each of claims 27 and 28 is also patentable over the cited references.

Provisional Interview Request

Should the instant reply, upon entry thereof into the current application's file, not result in an allowance of each of pending claims 1-28, the Examiner is respectfully requested to contact the undersigned so that a personal interview can be scheduled and held at the Examiner's earliest convenience at the US PTO. This request is made, so as to help expedite further prosecution of this application to allowance.

CONCLUSION

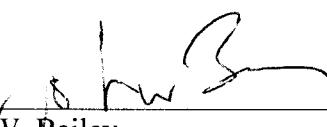
Based upon the remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of the pending claims 1-28 are allowed under the provisions of Title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey (Reg. No. 32,881) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: FEB 28 2006

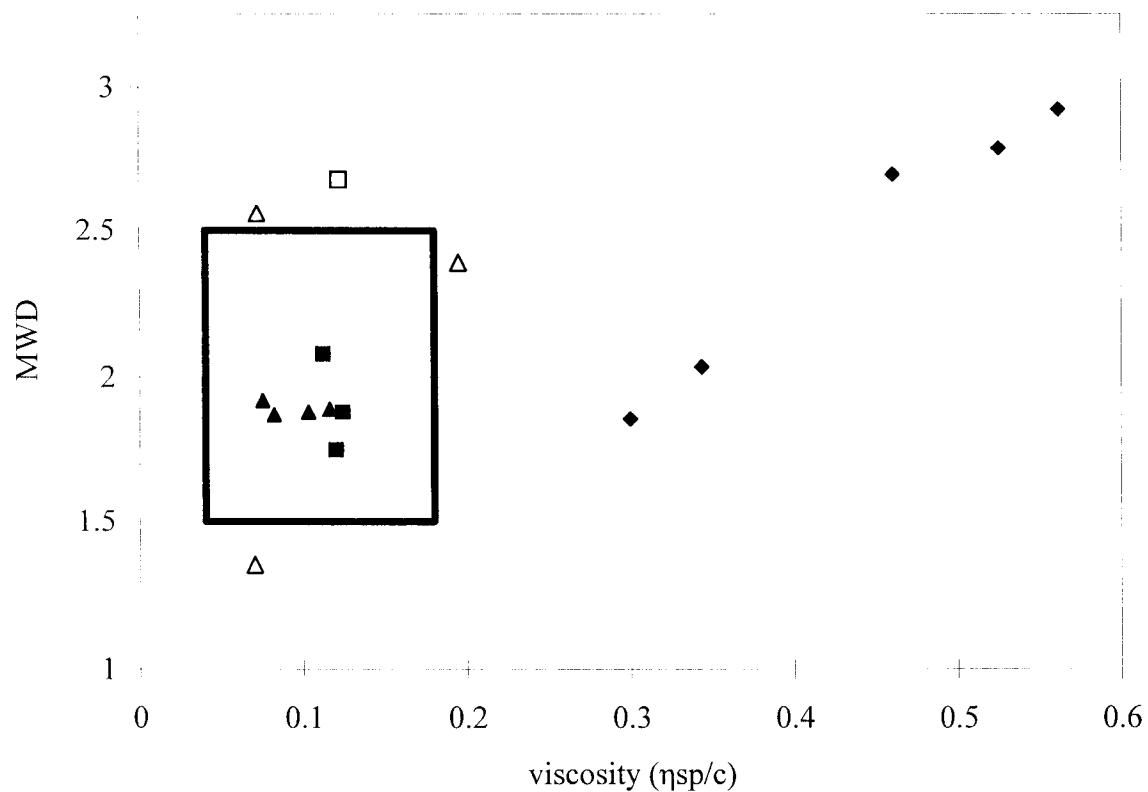
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Attachments: *Exhibit Figures 1-3*

Exhibit Figure 1



MWD stands for Molecular Weight Distribution.

Bolded Square represents the scope of viscosity and molecular weight distribution of the present invention.

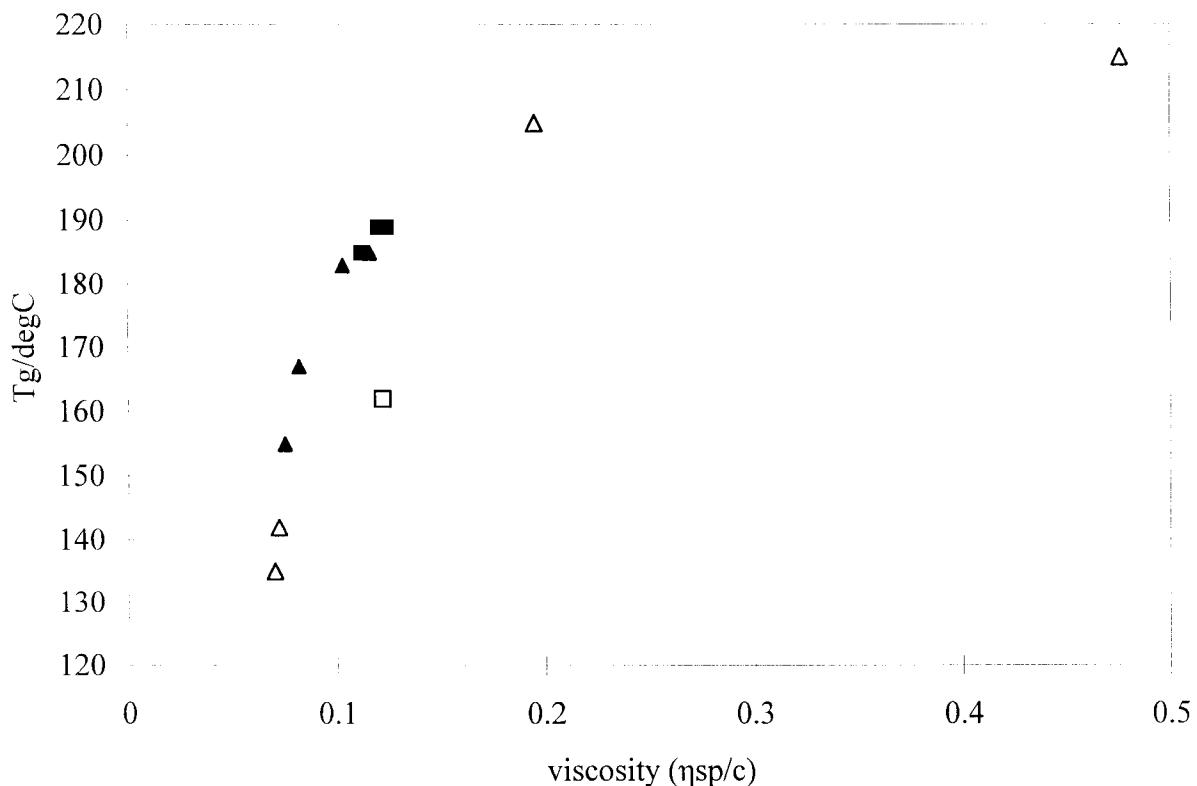
▲ and ■ represent Examples of the present invention (Examples 1, 3, 7, 8, 9a, 9b and 10a).

□ represents Comparative Example 5, equivalent to the **Braat US '327** reference, of the instant application.

△ represents Comparative Examples 1 and 2 of the instant application.

◆ represents Dalton US '164 (Examples 1, 5, 6, 7 and 8 of Dalton US '164)

Exhibit Figure 2

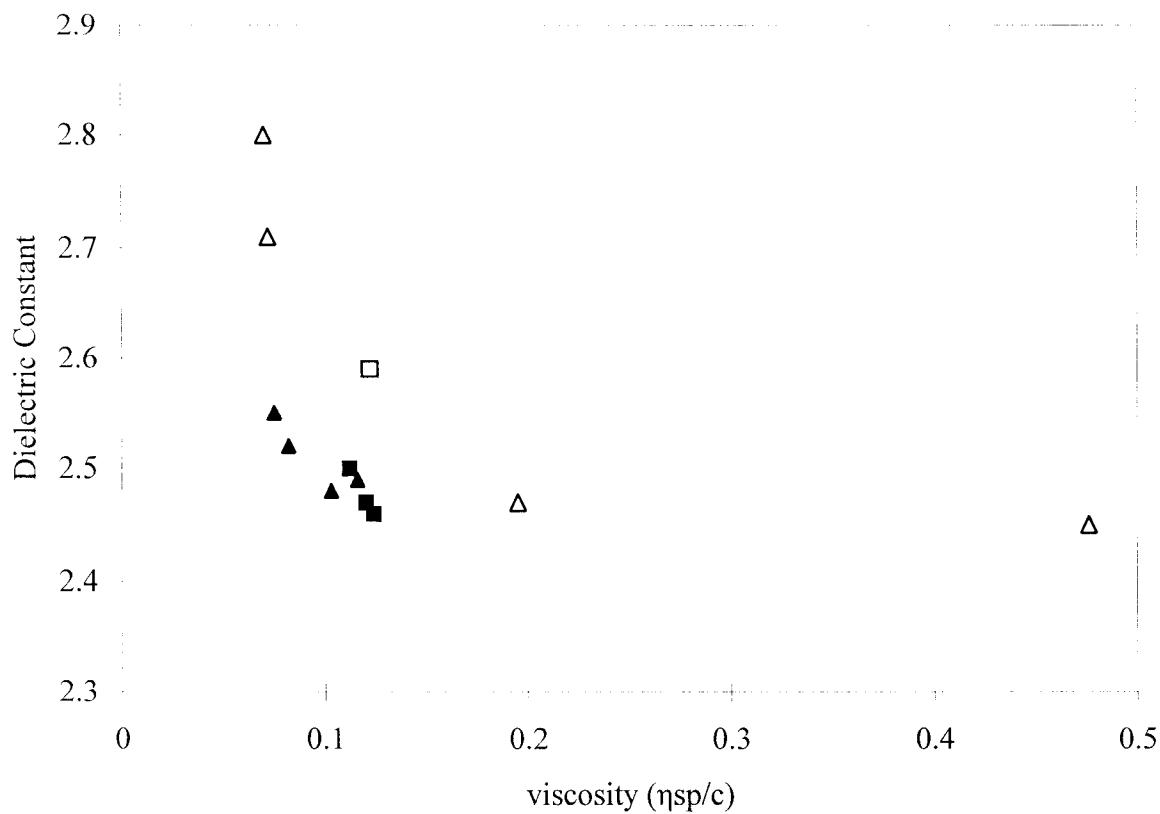


▲ and ■ represent Examples of the present invention (Examples 1, 3, 7, 8, 9a, 9b and 10a).

□ represents Comparative Example 5, equivalent to the **Braat US '327** reference, of the instant application.

△ represents Comparative Examples 1 and 2 of the instant application.

Exhibit Figure 3



▲ and ■ represent Examples of the present invention (Examples 1, 3, 7, 8, 9a, 9b and 10a).

□ represents Comparative Example 5, equivalent to the **Braat US '327** reference, of the instant application.

△ represents Comparative Examples 1 and 2 of the instant application.